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EXECUTIVE SUMMARY

Title: **Adult Fall-Run Chinook Salmon Movement in the Lower San Joaquin River and South Delta**

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Project Description and Primary Biological/Ecological Objectives:

The Department of Fish and Game (DFG) requests funds to monitor the upstream movement of fall-run chinook salmon in the lower San Joaquin River (SJR) and south Delta. This information would be analyzed to determine whether the installation of three south Delta temporary barriers (SDTB) and the head of Old River barrier (HORB) or low dissolved oxygen (DO) levels are significant impediments to upstream migration. A previous fish passage study indicates that these barriers have the potential to block upstream movement of a significant fraction of the San Joaquin River run (Hallock et al. 1970). Low DO in the Stockton Deep Water Channel (SDWC) or downstream in the mainstem San Joaquin River has been shown to block the upstream migration of adult San Joaquin fall-run chinook salmon. We propose to capture and tag adult fall-run chinook salmon in the lower SJR and track them upstream past the head of Old River. We would describe the use of different immigration routes through the south Delta and document any barriers or low DO areas that delay or block adult salmon passage.

The primary objectives of the project are 1) to describe the upstream migration routes of adult chinook salmon in the south Delta, 2) determine the effects of SDTB and HORB on adult salmon passage, and 3) determine whether low DO conditions are blocking or delaying upstream migration.

Project Tasks and Schedule:

Starting in the spring of 1999, DFG will coordinate with the existing Interim South Delta Program (ISDP) agencies and their fish monitoring programs and cooperatively develop an adult chinook salmon movement study plan for monitoring those fish that move through the lower San Joaquin River and south Delta channels. In the fall of 1999, adult fall-run chinook salmon will be captured, tagged with ultrasonic tags, released, and their movement tracked through the study area using mobile and stationary receivers. Special emphasis will be given to fish that will ascend the upper tributaries of the San Joaquin River. Water quality conditions will be measured in the main migration routes concurrent with the biotelemetry surveys. Any migration delays or blockages will be noted. After completion of the tracking period in late fall of 1999, the telemetry data will be analyzed and movement information compared with existing or proposed

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barriers, flow and water quality conditions. In the spring of 2000, a final progress report will be submitted describing the proportion of adult chinook salmon that use alternative routes to ascend the lower San Joaquin River, identify any barriers or water quality conditions that inhibit the upstream movement of adult salmon, and provide recommendations for improving upstream passage.

Project Justification:

The CALFED Bay-Delta Program has identified diversion dams without fish passage facilities as a major stressor contributing to the decline of priority species. There is little information whether installation of HORB has reduced the annual DO sag in the SJR to allow unimpeded passage of adult chinook salmon. It is also unclear whether SDTB barriers influence the migration patterns of fall-run chinook salmon. Current monitoring programs are inadequate to conclusively define patterns of chinook salmon immigration in Middle and Old River, and Grant Line Canal, and older literature suggest these routes were used historically.

Budget Costs and Third Party Impacts

DFG is requesting $348,875 over a one-year period. DFG will ask DWR to share some of the capital costs of the telemetry equipment and up to 50% of the permanent staff salaries. No third party impacts have been identified.

Applicant Qualifications

This project will be conducted by the DFG Fish Facilities Research Unit that has been conducting applied bioengineering research on fish passage, screening, and agricultural/municipal/SWP/CVP diversions for more than 25 years. The Unit is within the Fish Facilities Program of the Bay-Delta and Special Water Projects Division, which has conducted applied research in the S.F. Bay-Estuary for more than 35 years. Participants of the proposed study include a senior project manager, a research investigator, a field biologist with telemetry training, and two experienced fishery technicians.

Monitoring and Data Evaluation

Qualitative and quantitative evaluation of the project objectives will be accomplished through the publication of quarterly status reports and by their distribution to a technical advisory team, the CALFED contract manager, and other appropriate representatives for peer review. If required, an Ecological and Biological Monitoring Plan can be prepared, submitted, and approved by CALFED before the start of the field work. A final project report will be prepared and submitted upon completion of all the project tasks.

Coordination with Other Programs/Compatibility with CALFED Objectives

DFG staff has begun contacting the appropriate public agency representatives about preparation and future implementation of this proposal (e.g., DFG BDD Water Project Planning and Evaluation Section, DFG Inland Fisheries Division, DWR, USFWS, and USBR).